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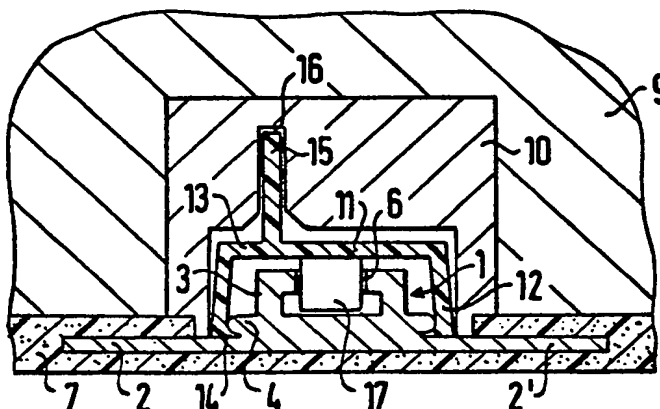
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(54) Insert moulding mounting element

(57) A mounting element 1 is insert moulded in a rigid foamed plastics body 7. An anchor plate 2, 2' being embedded in the body and a mounting zone 3 being left exposed so that it can be connected to another mounting member. During the moulding the mounting zone 3 is surrounded by a sealing element 11, for example in the form of a cap, which cooperates with a mould insert 10, to keep that zone free from foam material.

**FIG. 3**



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FIG. 1

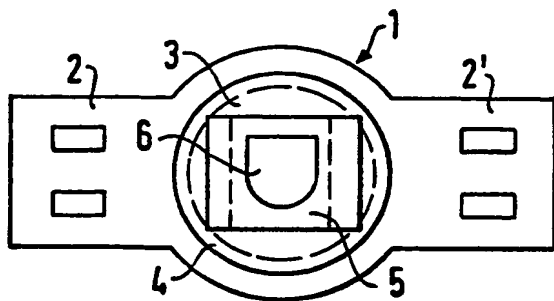


FIG. 2

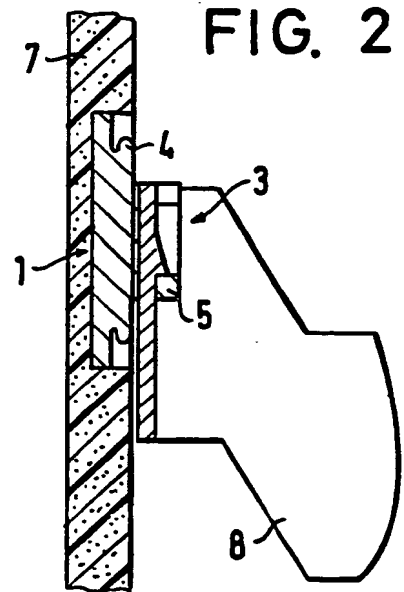


FIG. 3

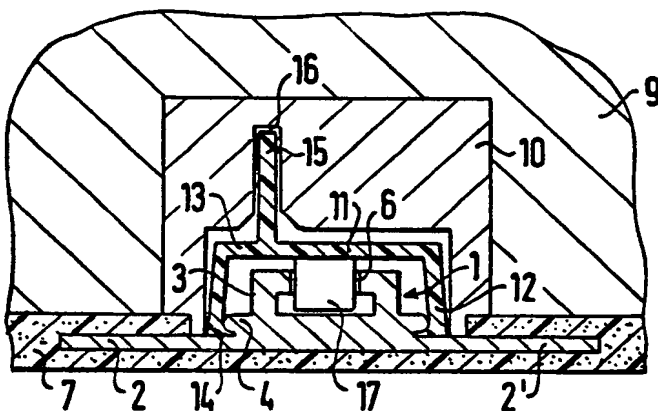


FIG. 4

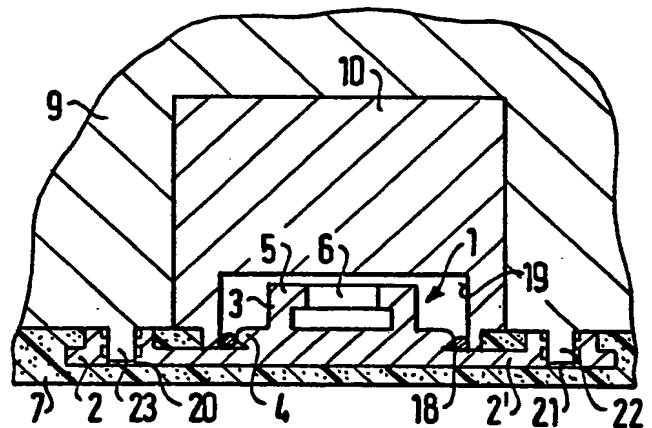
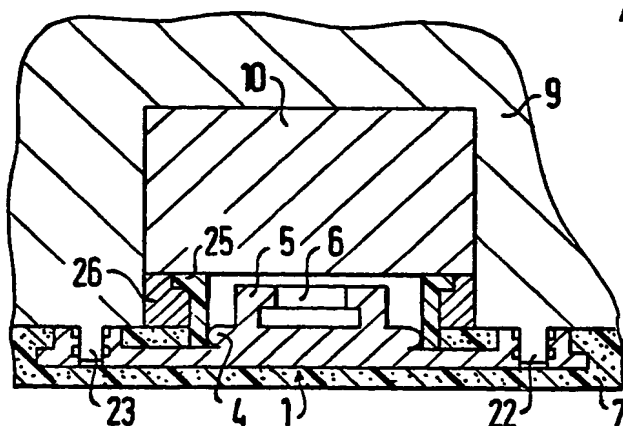


FIG. 5



INSERT MOULDING MOUNTING ELEMENT

The invention relates to insert moulding a mounting element in a body of rigid foamed plastics material.

5       As prior art, it is already generally known, for example to insert a mounting element in a foaming mould and to foam it in, in the region of an anchor plate of the mounting element. In this case, before the two components of the foam react with one another  
10       in the mould, they are present in the form of a liquid of water-like viscosity. During the foaming, a pressure of up to 10 bar can develop in the mould. In this case, the problem arises, during the foaming, of keeping the mounting zone of the mounting element  
15       free of foam material, regardless of its consistency, in order to be able to save an expensive finishing operation later with regard to the cleaning of the mounting zone and to be able to further treat the whole unit immediately, ready for assembly.

20       An object of the present invention is to provide a solution to the above-mentioned problem.

      According to the invention, this problem is solved in that, during the foaming operation to secure the anchor plate in the foamed rigid-plastics  
25       covering, the mounting zone is surrounded by a sealing

element cooperating with a mould insert. This sealing element may, for example, be a cap covering the mounting zone or an O-seal.

5 The cap lies over the mounting zone with a sealing action and is itself received by a cylindrical cavity in the mould and, as a result of its tapered outer contour, also seals this against the foam material pressing against it.

10 As a result of the sealed seating in the mould receiver, an additional pressing of the cap against the mounting zone is also advantageously effected at the sealed seating.

15 Thus, according to the invention, the cap may have a wall which extends in a taper and which, at the end face, changes over into a sealing lip engaging in the frusto-conical-like region of the mounting zone. In a further development of the invention, the top of the cap may advantageously be provided with a wall which can be embedded in a recess in the mould insert.

20 This wall at the top of the cap forms a handle region which facilitates the removal of the cap after the foaming process has been effected. Furthermore, the under side of the cap may have a pin which can engage in a retaining region of the mounting zone. The wall

25 at the top of the cap, which can be embedded in a recess in the mould insert, together with the pin at

the under side which engages in the mounting zone, causes the mounting element to be inserted in the foaming mould in the correct position. The cap preferably consists of plastics material.

5        According to another alternative of the invention, an O-seal may be used as a sealing element which can be embedded in the frusto-conical-like region of the mounting element, the outer circumference of the O-seal acting on an inner wall of  
10 the mould insert. Instead of the mounted O-seal, an elastomer sealing element may also be injection-moulded directly onto the mounting element.

      In order to locate the whole arrangement, the anchor plate following on the frusto-conical-like  
15 region may advantageously comprise two apertures in which pins of a foaming mould can be inserted. In this case, the two apertures may advantageously be disposed in the anchor plate one at each side of the mounting zone.

20        The invention includes a method of insert moulding a mounting element comprising an anchor portion and a mounting portion in a body of rigid foamed plastics material such that the anchor portion is embedded in the body to secure the mounting element  
25 thereto and the mounting portion is left exposed for connection with a mounting member cooperable

therewith, wherein a sealing element is provided around a periphery of the mounting portion in cooperation with a peripheral wall of a mould insert of the mould for the body during moulding of the body.

5       The said periphery of the mounting portion may be provided with an undercut, for example it may be frusto-conical or radiused, which is engaged by the sealing element or a part thereof, for example an internal sealing edge of the above-mentioned cap.

10       The invention also includes a mounting element comprising an anchor portion and a mounting portion and having a sealing element provided around a periphery of the mounting portion for use in a method as defined in the last but one preceding paragraph.

15       The invention also includes such a mounting element when assembled together with a mould insert such that the sealing element provided around the periphery of the mounting portion of the mounting element cooperates with a peripheral wall of the mould  
20       insert.

      In order that the invention may be well understood, some embodiments thereof, which are given by way of example only, will now be described, reference being made to the accompanying drawings, in  
25       which:

      Figure 1 shows a plan view of a mounting element;



Figure 2 shows a side sectional view of a mounting element insert moulded in a rigid foamed plastics body and cooperating with a mounting member;

Figure 3 shows a form of embodiment of the invention with a cap as a sealing element, in section;

Figure 4 shows a further form of embodiment of the invention with an O-seal as a sealing element, in section; and

Figure 5 shows another form of embodiment of the invention, in section.

According to Figure 1, the mounting element 1 consists essentially of a mounting member, or zone, 3 of frusto-conical-like construction from which the anchor portion in the form of an anchor plate 2, 2' extends on diametrically opposed sides. This anchor plate 2,2' is of flange-like construction, the mounting zone 3, being disposed in the middle region thereon. This mounting zone 3 comprises a base region 4 on which a retaining region 5 of inverted U-shape is disposed, which is provided with a central recess 6.

According to Figure 2, the whole arrangement is secured in a rigid foamed plastics body 7, the anchor plate 2,2' having been foamed into this body. Thus only the mounting zone 3 is exposed so that a cooperable mounting member 8, illustrated diagrammatically, may be locked in the recess 6 in the

mounting zone 3 by a projection. For example, it may be a question of mounting the rigid foamed plastics body 7, such as a door panel, on a mounting member 8 of a motor-vehicle body.

5        Now in order to secure the mounting element 1 illustrated in Figure 1 in the rigid foam covering 7, in the above-mentioned sense, this mounting element must be inserted in a foaming mould 9 as shown in Figure 3. A cylindrical mould insert 10 is embedded  
10      in this foaming mould 9.

      The mounting zone 3 of the mounting element 1 is surrounded by a sealing element, for example in the form of a plastics cap 11. This cap 11 thus covers the mounting zone 3 during the foaming operation  
15      regardless of the consistency of the components of the foam. For this purpose, the cap 11 is provided with a wall 12 which extends in a taper and which comprises a sealing lip 14 at the end face. This sealing lip 14 is provided around a periphery of the base region 4 of  
20      the mounting zone 3 of the mounting element 1, locating in an undercut provided therein by virtue of the periphery being frusto-conical or radiused. Thus the sealing lip forms a sealed connection against the periphery and provides protection against penetrating  
25      foam. For the adjustment, the end of the cap 11 comprises, at its under side, a pin 17 which engages

in the recess 6 in the retaining region 5 of the mounting element. Furthermore, a wall 15 may be provided at the top of the end of the cap 11, which wall can be embedded in a correspondingly shaped recess 16 in the mould insert 10.

As a result of the sealing lip 14, the wall 12 extending in a taper, the pin 17 and the wall 15 of the cap 11, this holds the mounting element 1 in an operationally reliable manner and is itself arranged precisely adjusted in the mould insert 10. Thus while the foaming operation is being carried out to form the rigid foamed plastics body 7, the mounting zone 3 is satisfactorily protected from the unwanted penetration of the components of the foam regardless of whether this is present in the form of a liquid of water-like viscosity or of setting foam. The mounting zone is satisfactorily protected from the foam material pressing against it.

In the form of embodiment shown in Figure 4, the base region 4 of the mounting zone 3 is surrounded by an O-seal 18 which is preferably made of rubber. The outer circumference of the O-seal 18 acts on the inner wall 19 of the mould insert 10 so that, as a result, a satisfactory protection of the mounting zone 3 from the foam pressing against it is afforded in the cooperation between the mould insert 10 and the O-seal

18. For the adjustment in this construction, the anchor plate 2. 2' of the mounting element 1 may be provided with apertures 20, 21. Pins 22, 23 of the mould 9 can be embedded in these apertures so that the mounting element 1 is thus also secured to the mould 9 in an operationally correct manner by this form of embodiment and at the same time protection of the mounting zone 3 from the penetration of unwanted foam is afforded.

10 In the example of embodiment shown in Figure 5, the mould insert can be provided with an elastomer insert in the sealing region in order to improve the sealing action. This elastomer insert 25, which may, for example, be of angle-shaped cross-section, engages a correspondingly complementarily formed metal ring 26 which is fitted, for example, to a mould insert 10. The mounting region 3 is also protected from unwanted effects during the foaming as a result of this form of embodiment.

20 The rigid-foam covering 7 may, for example, be the door panel, a roof lining or a parcel tray in a motor vehicle.

In a manner not illustrated in detail, it is also possible for example, to protect the mounting zone of a mounting element of different shape by a seal during the foaming operation, this seal being so formed that

it protects the mounting zone from the foam pressing against it, in a satisfactory manner. In any case, assurance is thus provided, in a simple manner, that the mounting zone remains free during the foaming operation so that finishing work can be dispensed with in an advantageous manner.

CLAIMS:

1. A method of insert moulding a mounting element comprising an anchor portion and a mounting portion in a body of rigid foamed plastics material such that the anchor portion is embedded in the body to secure the mounting element thereto and the mounting portion is left exposed for connection with a mounting member cooperable therewith, wherein a sealing element is provided around a periphery of the mounting portion in cooperation with a peripheral wall of a mould insert of the mould for the body during moulding of the body.
2. A method as claimed in claim 1, wherein the sealing element comprises a cap which is fitted on to the mounting portion to cover the same.
3. A method as claimed in claim 2, wherein said periphery of the mounting portion is provided with an undercut and the cap has an intumed sealing edge which locates in said undercut.
4. A method as claimed in claim 2 or 3, wherein the top of the cap is provided with an extension which is fitted in to a recess provided in the mould insert.
5. A method as claimed in claim 2, 3 or 4, wherein

the inside of the cap is provided with a projection which is fitted into a retaining region of the mounting portion.

5 6. A method as claimed in claim 1, wherein said periphery of the mounting portion is provided with an undercut and the sealing element comprises an annular sealing ring which engages said undercut and an inner surface of the peripheral wall of the mould insert.

10 7. A method as claimed in claim 7, wherein the sealing ring is circular in cross-section.

8. A method as claimed in claim 7, wherein the sealing ring is injection moulded directly onto said mounting element.

15 9. A method as claimed in claim 1, wherein the sealing element is an annular member having an angle-shaped cross-section and the peripheral wall of the mould insert comprises a complementary shaped annular member

20 10. A method as claimed in any one of the preceding claims, wherein the anchor portion is secured to the mould for the body by at least two pins extending from

the mould engaging in respective apertures in the anchor portion.

11. A method as claimed in claim 10, wherein the anchor portion extends on each side of the mounting portion and is secured to the mould by two pins extending from the mould and engaging in respective apertures in the anchor portion provided one on each side of the mounting portion.

12. A mounting element comprising an anchor portion and a mounting portion and having a sealing element provided around a periphery of the mounting portion for use in a method as claimed in any one of the preceding claims.

13. A mounting element as claimed in claim 12 assembled together with a mould insert such that the sealing element provided around the periphery of the mounting portion of the mounting element cooperates with a peripheral wall of the mould insert.

14. A mounting element for insert moulding in a body of rigid foamed plastics material comprising an anchor plate adapted to be embedded in the body for securing the element to the body and a mounting portion adapted



to be connected with a mounting member cooperable therewith, a mounting zone of the mounting portion being surrounded by a sealing element which is cooperable with a mould insert.

5 15. A mounting element as claimed in claim 14, wherein the sealing element is constructed in the form of a cap covering the mounting zone.

10 16. A mounting element as claimed in claim 15, wherein the mounting zone has a frusto-conical-like region and the cap has a wall which extends in a taper and which, at the end face, changes over into a sealing lip engaging in the frusto-conical-like region of the mounting zone.

15 17. A mounting element as claimed in claim 15 or 16, wherein the top of the cap is provided with a wall adapted to be embedded in a recess in the mould insert.

20 18. A mounting element as claimed in claim 15, 16 or 17, wherein the under side of the cap is provided with a pin embedded in a retaining region of the mounting zone.

19. A mounting element as claimed in any one of claims 15 to 18, wherein the cap consists of plastics material.

20. A mounting element as claimed in claim 14,  
5 wherein the mounting zone has a frusto-conical-like region, and the sealing element comprises an O-seal embedded in the frusto-conical-like region with the outer circumference of the O-seal being adapted to act on an inner wall of the mould insert.

10 21. A mounting element as claimed in claim 20, wherein said sealing element is elastomeric and injection-moulded directly onto the mounting element

22. A mounting element as claimed in claim 14, wherein the sealing element comprises an elastomer  
15 insert of angle-shaped cross-section adapted to engage a complementary shaped metal mould insert ring.

23. A mounting element as claimed in any one of claims 15 to 22, wherein the anchor plate following on  
20 comprises at least two apertures in which pins of a foaming mould can be embedded.

24. A mounting element as claimed in claim 23, wherein two said apertures are provided in the anchor

plate one to each side of the mounting zone.

25. A method of insert moulding a mounting element in a rigid foamed plastics body, substantially as herein described with reference to Figures 1 to 3, 4 or 5 of the accompanying drawings.

26. A mounting element and sealing element substantially as herein described with reference to Figures 1 and 3, 4 or 5 of the accompanying drawings.

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